

**HOLCODRYOPS MOULI, AN ANOMALOUS NEW GENUS AND  
SPECIES OF BEETLE FROM ECUADOR  
(COLEOPTERA: DRYOPIDAE)**

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*Abstract.*—A new genus and species, *Holcodryops mouli*, are described and illustrated with pen and ink drawings. The relationships of the new taxa with the Dryopidae and Limnichidae are discussed. The habitat is described and the collection site is illustrated.

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The new beetle described below was collected 12 years ago in Ecuador during an Ecuador-Peace Corps-Smithsonian Institution Aquatic Insect Survey of that country. Although I hoped that more adults and, perhaps, larvae of this odd genus would become available before it was described, that has not happened, and I believe the anomalous characters of this taxon warrant its description without further delay.

The family Dryopidae is diverse, consisting primarily of tropical beetles. Adult dryopids may be fully aquatic forms (e.g. *Helichus*), semiaquatic (e.g. *Pelonomus*, *Elmoparnus*), or strictly terrestrial (e.g. *Protoparnus*, *Sostea*, *Quadryops*); however, all known dryopid larvae are terrestrial. Brown (1981) reported 18 genera and 234 species of Dryopidae for the world; and two additional genera, the monotypic *Uenodryops* Satô (1981) and *Quadryops* Perkins and Spangler (1985) with three new species assigned to it, have been described. Although Dajos (1973) established a new family Chiloeidae based on his new genus and species *Chiloea chilensis* from Chile, his *Chiloea* is a synonym of *Sosteamorphus* and Lawrence (1982) cited Chiloeidae as a synonym of Dryopidae. Therefore, with the new genus described below, the family Dryopidae now includes 21 genera and 240 species.

The new genus and species, *Holcodryops mouli*, described below keys easily to the superfamily Dryopoidea in Crowson's (1955) classification of the Coleoptera. Because of its distinct metasternal suture, it also fits readily into the Heteroceridae-Lutrochidae-Limnichidae-Dryopidae-Elmidae-Psephenidae lineage as discussed by Lawrence and Newton (1982). In that lineage, the anomalous characters of *Holcodryops* indicate closest relationships with the families Dryopidae and Limnichidae and suggests three alternatives—this beetle could be assigned to the Dryopidae, to the Limnichidae, or to a family of its own. The last alternative has been eliminated because other important diagnostic characters such as those provided by immature stages and internal structures are not available for unequivocal familial assignment of this taxon. Lacking these additional character states I have centered my discussions on the relationships of this new genus with the Dryopidae and Limnichidae.

The close relationship between the Dryopidae and Limnichidae has long been recognized by coleopterists. Hinton (1939) in his study of the superfamily Dryopoidea stated, "The family Limnichidae is closer to the Dryopidae than to any other known family when both the internal and external

anatomy of the adults and larvae are taken into account. . . ." Although the larval evidence needs to be reevaluated because no true limnichid larvae had been described at that time, the close relationship of the two families is substantial. Referring to the adults, Hinton further stated, "The only difference between the Dryopidae and Limnichidae I have been able to discover which applies to all the forms examined, is a difference between the antennae. In the Limnichidae the antennae are filiform or with the apical segments forming a club. In the Dryopidae the segments beyond the second or third are always pectinate and form a club." Although that antennal description fits most taxa now in the Dryopidae, it does not fit his unusual genus, *Ceradryops* Hinton (1937) (from Sri Lanka), with only three antennal segments, none of which is pectinate, nor *Uenodryops* Satô (from Nepal) which has only six non-pectinate antennal segments.

When observed cursorily, the new genus *Holcodryops* appears to have the typical antennae and habitus of a member of the family Dryopidae; however, closer examination shows that the antennae are atypical and the genus shares some character states with both the Dryopidae and the Limnichidae. The antennae of the Dryopidae vary from 3 to 13 segments with 9 to 11 being the more common number; usually, the first antennal segment is not expanded, the second segment greatly expanded and followed by pectinate segments. However, apomorphic 3-segmented antennae without pectinate segments in *Ceradryops* Hinton (1937) and 6-segmented, non-pectinate antennae in *Uenodryops* Satô (1981) have been described for the family. In *Holcodryops*, the basal antennal segment is greatly expanded; the second is ovoid, smaller than the basal segment, and followed by subpectinate segments 3–7; and the terminal broad compact club is formed by segments 8–11.

In his couplet separating the Limnichidae from the Dryopidae, Crowson (1955) used,

in addition to the antennal differences, the nearly contiguous metacoxae and last segment of tarsi shorter than the combined length of the other tarsal segments as characters distinctive for the Limnichidae. He also mentioned the peculiar ovipositor of *Dryops* in connection with its egg-laying habits but did not compare it with that of the limnichids. The last tarsal segment of *Holcodryops* is much longer than the combined length of the other tarsal segments as Crowson (1955) described for the Dryopidae. The ovipositor of *Holcodryops* has short wide coxites that are very similar to those of *Uenodryops* but unlike the usual long slender coxites of the typical dryopids such as *Dryops* and *Pelonomus*.

In a later discussion of the dryopid-limnichid line, Crowson (1978) stated that members of the Dryopidae have five anal veins in the metathoracic wing and frequent elytral striae or regular rows of punctures, and lack a frontoclypeal suture—characters not found in the Limnichidae. The metathoracic wing of *Holcodryops* is very similar in venation to that of *Helichus*, *Dryops*, and a composite wing for the Dryopidae as illustrated by Wallace and Fox (1980). I have examined the wing venation of three limnichid genera—*Limnichites*, *Euthryptus*, and *Eulimnichus*—and have found that all three are different than the dryopid wing and have reduced anal veins and the anal cell absent. I have not been able to detect a frontoclypeal suture on the head of *Holcodryops* because the surface is densely punctate, but I cannot be certain that it is absent.

Crowson (1978) also mentions several larval characteristics that distinguish dryopid larvae from limnichid larvae but not having larvae of this new genus precludes a comparison of larval characters.

As noted, examination of the antenna and ovipositor of *Holcodryops* reveals that they are different from the characteristic antennae and ovipositors of most other described dryopid genera. With the noted previous documentation of aberrant departures for

the family it seems reasonable that the differences found in *Holcodryops* are evidence of another aberration within the family.

Although the evidence for placing *Holcodryops* in the Dryopidae is incomplete because males and the immature stages are not available, the evidence favors the action I have taken.

***Holcodryops* Spangler, NEW GENUS**  
Figs. 1-6

Body form subrectangular, moderately convex dorsally. Head partially retracted into pronotum; disc slightly depressed; fine carina across head between eyes; anteriorly shallowly recessed for reception of basal antennal segment. Maxillary palpus, 4-segmented. Labial palpus, 3-segmented. Antenna, 11-segmented; basal segment large, subtriangular; second segment almost round; last 4 segments forming compact club (Fig. 3). Clypeus coarsely, densely punctate. Frontoclypeal suture absent (?). Labrum short, broad, straplike, smooth. Pronotum with 2 gibbosities side by side on disc. Prosternum about 1.5 times as long as procoxa and trochanter combined. Prosternal process long triangle between procoxae; apex acute. Scutellum minute. Elytron with 9 rows of coarse punctures and 7 elongate gibbosities on intervals as illustrated (Fig. 1). Metathoracic wing (Fig. 4) without radial cross vein; with an anal cell and 5 anal veins. Prosternum, hypomeron, sides of metasternum, epipleuron, and abdominal sterna 1 and 2 deeply grooved for reception of legs. Legs with visible portion of procoxae transverse and trochantin visible. Tarsal formula 5-5-5; last segment swollen and almost twice as long as segments 1-4 combined. Tarsal claws robust, without teeth. Tibiae slightly expanded apicolaterally and furrowed subapically for reception of tarsal segments 1-4.

*Type species of the genus: Holcodryops mouli* Spangler, new species.

*Etymology.*—*Holcodryops* from *holkos*, G., meaning furrow; referring to the deep

furrows on the prosternum, hypomeron, epipleuron, metasternum, and abdominal sterna 1 and 2 for reception of the legs; plus *Dryops*, the nominotypic genus of the family; gender, masculine.

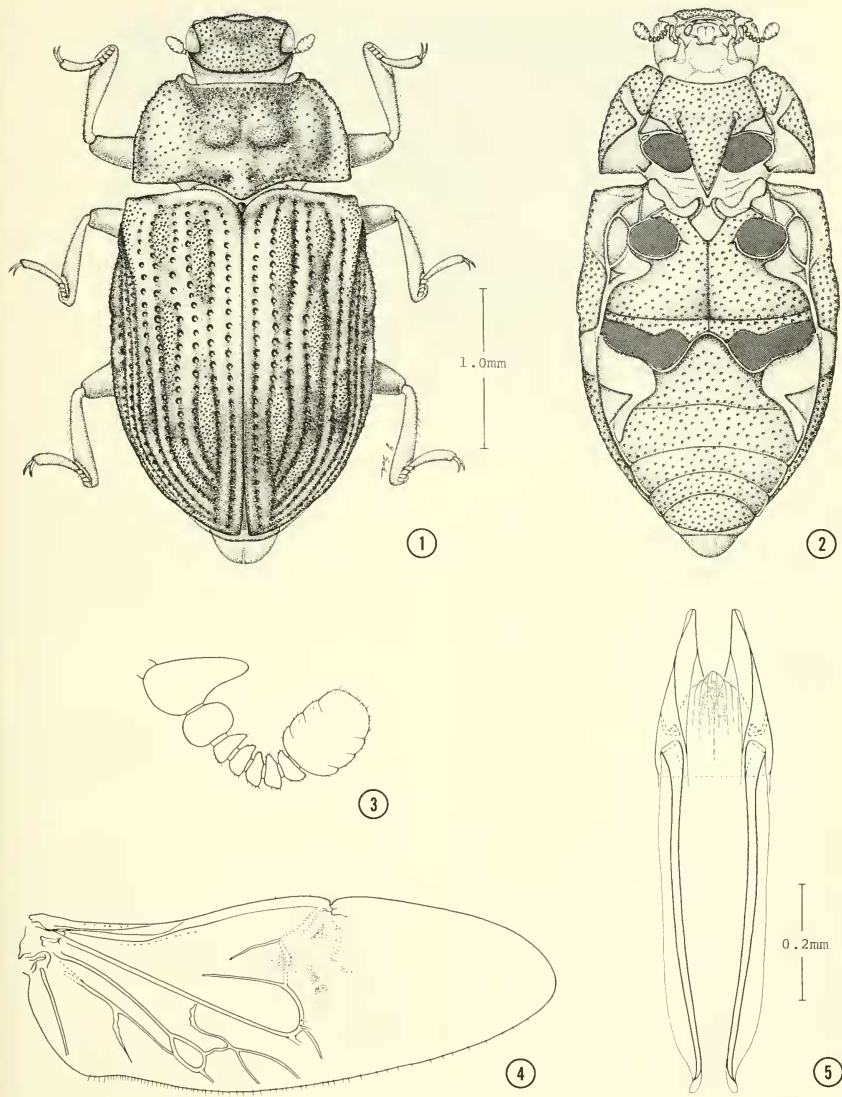
***Holcodryops mouli* Spangler,**  
**NEW SPECIES**  
Figs. 1-6

*Holotype* female.—Body form and size: Subrectangular, moderately convex dorsally (Figs. 1, 2). Length, 3.52 mm; width, 1.66 mm.

*Color:* Plumbeous dorsally with cupreous metallic reflections on head and pronotum more evident than those on elytra. Ventral surface and appendages rufobrunneous.

*Head:* With coarse, dense, seta-bearing punctures; punctures separated by about half their diameter. Eyes narrow from above. Antenna (Fig. 3) with enlarged subtriangular basal segment; second segment almost round; segments 3-7 narrow, subpectinate; segments 8-11 forming compact club. Labrum very shallowly emarginate anteriorly. Last segment of maxillary and labial palpi enlarged and about twice as broad as penultimate segment.

*Thorax:* Pronotum 0.66 mm long, 1.27 mm wide; widest at base; sides arcuate, diverging posteriorly, and subserrate; anterolateral angles obtuse; posterolateral angles in form of right-angles; surface moderately convex medially; lateral margins explanate; disc with 2 adjacent gibbosities and base with 2 prescutellar foveae; coarsely punctate on explanate sides and in front of discal gibbosities; punctures separated by 1 to 4 times their diameter, denser on anterior margin. Elytron with 9 rows of coarse punctures, punctures separated by one-half to one times their diameter; intervals microreticulate; with 7 low, elongate gibbosities as illustrated (Fig. 1); gibbosities with fine, dense, seta-bearing punctures; side deeply emarginate near midlength for reception of apex of metafemur and base of metatibia



Figs. 1-5. *Holcodryops mouli*, new species. 1, Habitus, Dorsal view. 2, Same, Ventral view. 3, Antenna. 4, Hindwing. 5, Ovipositor.





Fig. 6. *Holcodryops mouli*, new species, biotope; 38 km east of Puerto Viejo, Manabi, Ecuador.

(Fig. 2). Prosternum 1.5 times as long as combined length of procoxa and trochanter combined. Prosternal process an elongate triangle with sides rimmed on apical third and apex acute. Mesosternum deeply depressed medially for reception of prosternal process. Metasternum with disc moderately depressed, deeper posteriorly; with longitudinal groove on midline; surface coarsely moderately densely punctate, punctures separated by 1 to 3 times their diameter. Legs with coarse, dense, seta-bearing punctures on ventral surface. Femora when retracted into ventral impressions with extensive, impunctate, dull areas on upper (opposing) surface; lower surfaces (when retracted) punctate and shiny. Tibiae moderately expanded apicolaterally and lateral margins of expansion with fringe of dense, short, stout setae. Tarsi of 5 segments; last segment swollen and almost twice as long as segments 1–4 combined. Tarsal claws robust, without teeth.

*Abdomen:* First sternum deeply furrowed for reception of metafemur and metatibia. Second sternum furrowed for reception of metatarsi (Fig. 2). Surface, except furrows,

coarsely, moderately densely punctate. Punctures on sterna 1 and 2 larger and separated by one-half to one times their diameter; those on sterna 3 and 4 smaller and sparser; those on sternum 5 as on sternum 4 but much denser.

*Female genitalia:* As illustrated (Fig. 5).

Male.—Unknown.

*Type-data.*—Holotype ♀: ECUADOR: MANABI: Puerto Viejo (38 km E), 11 May 1975, P. J. Spangler; deposited in the U.S. National Museum of Natural History, Smithsonian Institution.

*Etymology.*—The specific epithet, *mouli*, is a patronym for Edwin T. Moul, my inspirational high school biology teacher who shared and encouraged my entomological interests. Dr. Moul became a marine phycologist, is now retired, and lives in Woods Hole, Massachusetts.

*Habitat.*—The unique holotype was collected in the vicinity of a small waterfall (Fig. 6) where I was searching for aquatic beetles in the water, on plants in the splash zone, and along the brook draining from the small pool below the waterfall. This beetle was collected from a plant about 12 m from

the splash zone as I swept an aerial net through plants bordering the brook, and I believe it is a terrestrial genus.

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